

of our native speedwells (*V. serpyllifolia*). The larvæ feed between the thickened upper leaves and pupate therein. *V. serpyllifolia* is a smooth species, so that the nidus is free from the woolliness so visible in that of *V. chamædrys*.

Fulwith Grange, near Harrogate, Aug. 31, 1882.

INTRODUCTORY PAPERS ON ICHNEUMONIDÆ.

BY JOHN B. BRIDGMAN AND EDWARD A. FITCH.

No. III.—CRYPTIDÆ (*continued*).

STILPNUS, *Grav.*

A. Abdomen black; antennæ with seventeen joints.

a. Trochanters black (female).

Femora and tibiæ red; aculeus exerted, but very short.

2. *deplanatus*, 1½ line.

b. Trochanters red (males and females).

* Legs red; coxæ more or less black. - 1. *gagates*, 1½—2 lines.

** Legs red. - - - - - 3. *pavoniæ*, 1½ line.

B. Middle of abdomen red, sometimes black (females).

a. Flagellum of antennæ 15-jointed. - - 5. *blandus*, 1½—2 lines.

b. Flagellum of antennæ 14-jointed. - - 4. *dryadum*, 3 lines.

Gravenhorst, who described four species, placed this genus in the Ichneumonidæ, but remarked on its affinity to some of the smaller species of *Cryptus* and *Phygadeuon*, and to *Hemiteles*. Most recent authors, following Taschenberg, have included *Stilpnus* in the Cryptidæ, although it has not an exerted ovipositor. Haliday says: "This genus is more allied to *Hemiteles* than to any other Ichneumonidæ; the males of *Stilpnus*, and some species of *Atractodes*, are also very similar" (Curt., Brit. Ent., 388). In the 'Annals of Natural History,' Haliday described sixteen species of *Atractodes*, and of his *A. vestalis* writes: "This species might perhaps with equal reason be referred to the genus *Stilpnus*; indeed any definite line drawn between these two genera must be arbitrary" (vol. ii., p. 118; 1839). Thomson carries out these views when he unites *Stilpnus* and *Atractodes* in his tribe Stilpnina, which follows his Hemitelina (Opusc. Ent., 468). The species, which are difficult to differentiate, are not rare in Britain. *S. dryadum* is beautifully figured by Curtis (Brit. Ent., pl. 388), and is outlined in Vollenhoven's 'Schetsen' (pt. 1, pl. i., fig. 4). Unfortunately but little is known of the biology of this genus.

Mr. E. A. Butler bred one specimen of *S. deplanatus* from a silky white cylindrical cocoon, with an opaque white girdle round its centre, which was 3 lines long. The host was a lepidopterous larva, feeding on honeysuckle, collected in Brecknockshire. Brischke says that *S. gagates* is a parasite of *Anthomyia radicum*. The fact of a species being bred from a cocoon shows that the genus does not belong to the Ichneumonidæ.

PHYGADEUON, Grav.

SECTION 1—Scutellum and abdomen black.

- A. Antennæ entirely black (females).
- a. Metathoracic areæ complete and distinct; 1st abdominal segment aciculate.
- * Front legs black, hind ones partly chestnut; aculeus only just exerted. - - - - - 4. *flavimanus*, $3\frac{1}{2}$ lines.
- ** Legs red, hind coxæ brown; aculeus about one-fourth of abdomen.
1. *caliginosus*, $2\frac{1}{2}$ —3 lines.
- b. Metathoracic areæ not complete; legs red, hind coxæ darker; 1st segment partly aciculate; aculeus about one-fourth of abdomen.
60. *corruptor*, $2\frac{1}{2}$ —3 lines.
- B. Antennæ red at the base, not white-ringed (females).
- a. Metathoracic areæ complete and distinct.
- Metathorax bispined; 1st and 2nd segments polished; femora and tibiæ red, apex of hinder blackish; aculeus nearly half of abdomen. - - - - - 36. *afflictor*, nearly 3 lines.
- b. Metathoracic areæ not complete and distinct.
- * Coxæ and trochanters black; aculeus only just projecting.
41. *cephalotes*, $3\frac{1}{2}$ — $3\frac{3}{4}$ lines.
- Note.—Gravenhorst says of the antennæ, “6–9 supra albidis”; but Taschenberg makes no mention of the whitish marks.
- ** Legs red; antennæ red-brown; aculeus half of abdomen.
59. *brevicornis*, 3 lines.
- C. Antennæ white-ringed (females).
- a. Metathoracic areæ complete and distinct.
- 1st segment aciculate; greater part of femora and tibiæ red; aculeus about one-fifth of abdomen. - 3. *nigrita*, $2\frac{2}{3}$ lines.
- b. Thoracic areæ not complete.
- Coxæ red; aculeus rather more than half of abdomen.
- * Inner orbits white. - - - - - 61. *oviventris*, 3 lines.
- ** Inner orbits black.
- † Hind tarsi pale-ringed. - - - - - *tarsatus*, 3—4 lines.
- ** Hind tarsi not pale-ringed. - - - - - 67. *fortipes*, $3\frac{1}{2}$ lines.
- a. Metathoracic areæ complete and distinct.
- D. Antennæ black (males).
- a. Metathoracic areæ complete and distinct.
- * Supero-medial area broader than long, or as broad as long, hexagonal.
- † All the coxæ and trochanters black.
- ‡ 1st segment of abdomen very broad and strongly keeled.
3. *nigrita*, $2\frac{1}{2}$ lines.

- ‡‡ 1st segment much narrower and scarcely keeled.
 4. *flavimanus*, $2\frac{1}{5}$ — $2\frac{1}{3}$ lines.
- †† Front coxæ and trochanters pale, hind ones black.
 62. *nyctemerus*, 3— $3\frac{1}{2}$ lines.
- ††† All the coxæ and trochanters whitish to pale yellow.
 61. *oviventris*, $2\frac{2}{3}$ lines.
- ** Supero-medial area broader than long, almost semicircular.
 1. *caliginosus*, $2\frac{1}{5}$ — $2\frac{1}{2}$ lines.
- *** Supero-medial area distinctly longer than broad.
 37. *cinctorius*, $2\frac{1}{2}$ lines.
- b. Metathoracic areæ not complete and distinct.
 Metathorax with two cross lines: supero-medial area not closed at the sides.
- * Hind tarsi not white-ringed. - 41. *cephalotes*, $3\frac{1}{3}$ — $3\frac{1}{2}$ lines.
- ** Hind tarsi distinctly white-ringed. - - *tarsatus*, $4\frac{1}{2}$ lines.

SECTION 2.—Scutellum pale; abdomen black.

Female. - - 37. *cinctorius*, 3— $3\frac{2}{3}$ lines.

SECTION 3.—Scutellum pale; abdomen red and black.

- A. Metathoracic areæ incomplete (females).
 Antennæ tricoloured; aculeus more than half the length of the abdomen.
- a. Abdomen red, apex black. - 44. *congruens*, 3— $4\frac{1}{5}$ lines.
- b. 1st to 3rd segments of abdomen red. 43. *graminicola*, $2\frac{1}{2}$ lines.
- B. Metathoracic areæ complete and distinct (males).
 Supero-medial area never quadrate; middle of abdomen red; face white-marked.
- a. Front coxæ dark.
- * Metathorax without spines. - - 16. *cretatus*, $2\frac{2}{3}$ lines.
- ** Metathorax with very prominent spines. 22. *pumilio*, $2\frac{1}{2}$ —3 lines.
- b. Front coxæ and trochanters pale. - 21. *larvatus*, $3\frac{1}{2}$ lines.
- C. Metathoracic areæ incomplete or indistinct (males).
 Supero-medial area, if present, quadrate; face and mouth yellowish or pale-marked.
- a. Antennæ white-ringed. - - - 44. *congruens*, 5 lines.
- b. Antennæ not white-ringed.
- * Middle of abdomen red; tibiæ red, apex of hinder black.
- † Front coxæ and trochanters pale. 53. *arridens*, $2\frac{1}{2}$ —3 lines.
- †† Front coxæ and trochanters dark. 51. *jucundus*, $2\frac{1}{2}$ —4 lines.
- ** Middle of abdomen brown-red; base of hind tibiæ white (absent in a var.). - - - - 56. *basizonus*, $3\frac{1}{2}$ lines.

SECTION 4.—Scutellum black; abdomen red or red and black.

- A. Antennæ black (females): var. of *fumator* red at the base.
- a. Metathoracic areæ complete and distinct.
- * Abdomen distinctly narrower than the thorax, lanceolate.
 14. *nitidus*, $2\frac{1}{3}$ —3 lines.
- ** Abdomen as broad as the thorax, oval.
- † 2nd and 3rd segments of abdomen more or less red.

- † Aculeus about one-fourth or one-third of abdomen.
8. *funator*, $1\frac{3}{4}$ —2 lines.
- †† Aculeus half of abdomen. - - - 13. *pullator*, $1\frac{1}{3}$ — $1\frac{1}{2}$ line.
- ††† Aculeus rather shorter than the abdomen. *speculator*, $2\frac{1}{4}$ lines.
- †† 2nd to 5th segments red; aculeus half of abdomen.
17. *vagans*, 2 lines.
- b. Metathoracic aræ incomplete.
2nd to 7th abdominal segments red. 48. *scoticus*, 3— $3\frac{1}{4}$ lines.
- B. Antennæ black, red at the base (females).
- a. Metathoracic aræ complete.
- * 1st abdominal segment distinctly aciculate.
- † 2nd segment polished, at the most with very scattered punctures or aciculations.
- + Aculeus about half of abdomen; legs red, or almost entirely so.
- § 2nd abdominal segment red. - *nanus*, $1\frac{1}{4}$ to nearly $1\frac{1}{2}$ line.
- §§ 2nd and 3rd segments red, 4th more or less so.
7. *rufulus*, about $2\frac{1}{2}$ lines.
- †† Aculeus very short; middle of abdomen red.
6. *variabilis*, $2\frac{1}{2}$ lines.
- †† 2nd segment finely aciculate; aculeus about one-fourth of abdomen.
- × Coxæ black. - - - - - 33. *semipolitus*, 3 lines.
- × × Coxæ red. - - - - - 12. *æreus*, 2 lines.
- ** 1st abdominal segment polished, or with very scattered punctures or aciculations.
- † Middle and hind tibiæ not spined along the outside.
- ‡ 2nd and 3rd abdominal segments, and greater part of legs, red.
18. *ovatus*, $2\frac{1}{2}$ lines.
- †† Abdomen red, 1st segment more or less black.
- § Aculeus at least one-third of abdomen.
- × Hind femora red. - - - - - 19. *bitinctus*, 2— $2\frac{1}{2}$ lines.
- × × Hind femora more or less black.
- o Legs red, greater part of hind femora black.
24. *plagiator*, $1\frac{3}{4}$ —3 lines.
- oo Tibiæ and apex of front femora red. 25. *erythrogaster*, 2 lines.
- §§ Aculeus very short; legs red. - - - 20. *exiguus*, $1\frac{1}{2}$ line.
- †† Middle and hind tibiæ with spines along the outside.
35. *vagabundus*, 3—4 lines.
- b. Metathoracic aræ not complete.
Segments 1st to 4th, front femora and tibiæ, red.
42. *rufinus*, 3 lines.
- C. Antennæ red-ringed (females).
Metathoracic aræ complete and distinct.
- * 1st segment distinctly aciculate.
Middle of abdomen and legs almost entirely red.
7. *rufulus*, $2\frac{1}{2}$ lines.
- ** 1st and 2nd segments polished.
Abdomen red, petiole black; tibiæ and apex of front femora red.
25. *erythrogaster* var., 2 lines.
- D. Antennæ white-ringed (females).
- a. Metathoracic aræ complete and distinct.
- * Abdomen and legs red; petiole and coxæ black; hind and middle tibiæ spined outside. - - - 35. *vagabundus*, $2\frac{1}{3}$ — $3\frac{1}{2}$ lines.

- ** Segments 2nd and 3rd and greater part of legs red; aculeus half of abdomen; apex of abdomen white - - *fulgens*, 3 lines.
- b. Metathoracic areae not complete and distinct.
- * Metathorax so rough that the areae are not distinct.
- † Abdomen red; tibiae partly white. 38. *parviventris*, 3—4 lines.
- †† Segments 2nd to 3rd, femora and tibiae, red; apex of hinder black. 39. *quadrispinus*, 3—4 lines.
- ** Metathorax not so roughened, more or less distinctly rugose.
- † 1st and 2nd abdominal segments polished.
- § Abdomen red, petiole black.
- × Inner orbits above the antennae red. - 46. *errator*, 4 lines.
- × × Inner orbits not red.
- o Hind tibiae red, apex black; legs rather stout. 47. *abdominator*, 2—3½ lines.
- oo Hind tibiae black, extreme base lighter; legs less short and thick. 49. *obscuripes*, 3¼ lines.
- §§ Apex of abdomen, and more or less of the 1st segment, black.
- + Coxae black. - - - - - 45. *curvus*, 3—4¼ lines.
- + + Coxae red. - - - - - *probus*, 2½—3 lines.
- †† 1st abdominal segment aciculate, 2nd finely reticulate.
- Abdomen red, apex black, anus white, legs red; aculeus as long as the abdomen. - - - - - 63. *lacteator*, 3—3½ lines.
- E. Antennae tricoloured (females).
- a. Metathoracic areae complete and distinct.
- * 1st segment distinctly aciculate.
- Segments 2nd to 3rd and legs almost entirely red; aculeus very short. - - - - - 5. *dumetorum*, 2¼—2¾ lines.
- ** 1st and 2nd segments polished, at the most with scattered punctures and aciculations.
- † Abdomen red, petiole black.
- † Middle and hind tibiae with spines on the outside. 32. *profligator*, 2¼—3½ lines.
- †† Middle and hind tibiae without spines. 26. *brevis*, 2—2½ lines.
- †† Apex of abdomen black.
- § Legs entirely red. - - - - - 27. *gravipes*, 2⅓ lines.
- §§ Apex of hind femora and tibiae black. 28. *improbus*, 2—3 lines.
- b. Metathoracic areae not complete and distinct.
- * 1st segment not regularly punctured, with scattered punctures or indistinct aciculations, generally polished in front, and without any perceptible sculpture; 2nd segment polished, with now and then very fine scattered punctures.
- † Metathorax with two transverse lines; supero-medial area not defined at sides. - - - 28. *improbus*, var., 2—3 lines.
- †† Metathorax with one or no transverse lines, the lateral areae not subdivided.
- † Metathorax polished.
- Segments 1st to 3rd and greater part of legs red; aculeus half of abdomen. - - - - - 43. *graminicola*, 2½ lines.
- †† Metathorax more or less distinctly rugose.
- § Hind tibiae red, apex black. - - - 54. *Spinola*, 3 lines.
- §§ Hind tibiae white at the base, apex black. 56. *basizonus*, 2—3½ lines.

** 1st and 2nd segments densely and evenly punctured.

66. *erythrinus*, $2\frac{2}{3}$ lines.

F. Metathoracic aræ complete and distinct (males).

a. Supero-medial area transverse.

* Supero-medial area hexagonal, not rounded in front or behind.

† Tibiæ white-ringed. - - - 38. *parviventris*, 4 lines.

†† Tibiæ not white-ringed; abdomen red, petiole black.

‡ Middle and hind tibiæ spined outside. 35. *vagabundus*, 4 lines.

‡‡ Tibiæ not spined outside.

§ Legs stout, femora black. - - - 49. *obscuripes*, 4 lines.

§§ Legs slender, femora red. - - - 47. *abdominator*, 4 lines.

** Supero-medial area transverse, rounded at least in front.

× 1st and 2nd segments aciculate.

Greater part of abdomen and legs red. - 2. *rugulosus*, $2\frac{1}{2}$ lines.

× × 2nd segment polished, not aciculate.

o Part of face and front coxæ white. - 15. *bifrons*, $2\frac{1}{4}$ — $2\frac{3}{4}$ lines.

oo Face and front coxæ black. - - - 17. *vagans*, 2 lines.

× × × 1st and 2nd segments polished. 34. *subtilicornis*, 2 — $2\frac{1}{4}$ lines.

b. Supero-medial area as broad as long, but never quadrate.

* Supero-medial area would be hexagonal, but for the bottom line projecting inwards in the form of an angle or bow.

† Mouth and inner orbits white. - 11. *jejunator*, $2\frac{1}{2}$ — $3\frac{1}{4}$ lines.

†† Face black.

‡ The 3rd abdominal segment, only, red; legs dark.

10. *troglydites*, 2 lines.

†† 2nd to 3rd or 2nd to 4th abdominal segments red; legs vary.

§ 2nd segment very indistinctly aciculate. 6. *variabilis*, $2\frac{1}{2}$ —3 lines.

§§ 2nd segment not aciculate. - - - 8. *fumator*, $1\frac{3}{4}$ —3 lines.

** Supero-medial area hexagonal, with more or less blunt angles.

× Inner orbits white. - - - 56. *basizonus*, 2 — $3\frac{1}{2}$ lines.

× × Inner orbits black.

o All the coxæ of the same colour.

→ Coxæ and legs red, or greater part red.

→ → Coxæ not darker than the legs; base of antennæ generally red.

5. *dumetorum*, $2\frac{1}{3}$ — $2\frac{2}{3}$ lines.

++++ Coxæ darker than the legs. - - - 8. *fumator*, $1\frac{3}{4}$ —3 lines.

→ → Coxæ black.

∞ All the femora red or black. - - - - 8. *fumator* var.

∞ ∞ All the femora more or less browned; the hind ones, especially, very slender; 2nd to 6th segments red. 9. *tenuipes*, 3 lines.

oo Hind coxæ darker than the front ones.

Front and middle coxæ more or less red and white; hind ones black, or partly so. - - - - 8. *fumator* var.

*** Supero-medial area pentagonal; 1st segment aciculate.

Middle of abdomen and legs partly red. 23. *ambiguus*, 3 — $3\frac{1}{2}$ lines.

c. Supero-medial area distinctly longer than broad, in shape pentagonal or hexagonal.

† Inner orbits white.

* Metathorax with lateral spines; 1st segment with prominent spiracles. - - - - 64. *sperator*, $2\frac{1}{2}$ — $3\frac{1}{2}$ lines.

** Metathorax without lateral spines; spiracles of 1st segment scarcely perceptible. - - - 63. *lacteator*, $2\frac{1}{2}$ —4 lines.

†† Inner orbits not white.

- † Base of antennæ and back of middle abdominal segments red.
12. *areus*, 2 lines.
- †† Segments 2nd to 4th or 5th red; base of antennæ black.
65. *procerus*, $2\frac{1}{2}$ —5 lines.
- G. Metathoracic areæ not complete or distinct (males).
- * Metathorax very rough, so that the areæ are not distinct.
- † 1st segment broad; apex of hind femora black; face and front coxæ white-marked. - - - 39. *quadrispinus*, 3—4 lines.
- †† 1st segment narrow; hind femora, face and front coxæ, black.
40. *senilis*, $2\frac{3}{4}$ — $3\frac{1}{4}$ lines.
- ** Metathorax not very rough.
- a. Metathorax with two cross lines; the supero-medial area not closed at the sides.
Segments 2nd to 4th red,* or red with dark bands; ** femora and tibiæ red, apex of hinder black.
- * 2nd abdominal segment smooth. - 14. *nitidus*, $2\frac{2}{3}$ — $3\frac{1}{2}$ lines.
- ** 2nd segment distinctly punctate. - - - *Marshalli*, 3 lines.
- b. Supero-medial area not closed above, in form 4- or 6-angled; if closed above then somewhat quadrate, the upper lateral areæ often wanting.
- * Legs marked with white.
- † Front coxæ and trochanters white.
- ‡ Hinder coxæ black. - - - - 68. *galactinus*, $2\frac{1}{2}$ —3 lines.
- †† Hinder coxæ red. - - - - 28. *improbis*, 2—3 lines.
- †† Coxæ and trochanters black.
- § Internal orbits, a line below the wings and ring of tarsi, white.
69. *subguttatus*, nearly 4 lines.
- §§ Base of tibiæ and orbits white. - 56. *basizonus*, almost 4 lines.
- ** Legs not marked with white; middle of abdomen red.
- × Clypeus and labrum whitish. - - - 55. *labralis*, 3—4 lines.
- ×× Face not white-marked.
- o Metathoracic spiracles almost linear.
50. *erythrosticktus*, 4— $4\frac{2}{3}$ lines.
- oo Metathoracic spiracles round, or nearly so; supero-medial area subquadrate.
- + Greater part of hind femora black. - 52. *assimilis*, 3— $5\frac{1}{2}$ lines.
- + + Hind femora red, apex black. - - - 57. *sericans*, $3\frac{2}{3}$ lines.
- c. Supero-medial area not closed below, which forms a long area from base to apex of the metathorax.
- * Slanting part of the metathorax perpendicular. 70. *subtilis*, $2\frac{1}{2}$ lines.
- ** Slanting part of the metathorax forms a continuation of the upper part by a gradual slope.
- Legs vary much in colour. - 71. *teneriventris*, $2\frac{1}{4}$ — $2\frac{3}{4}$ lines.

SECTION 5.—Thorax more or less red.

Abdomen red, apex black, anus white-marked, antennæ white-ringed (females).

- * Hind femora black.
- † Head almost entirely red. - 30. *sanguinator*, $2\frac{1}{2}$ —3 lines.
- †† Head almost entirely black.
- ‡ Metathoracic areæ complete and distinct. 29. *flagitator*, $2\frac{1}{4}$ lines.
- †† Metathoracic areæ incomplete. - - - 58. *tyrannus*, 3 lines.
- ** Greater part of hind femora red. - 31. *Hopei*, $2\frac{1}{3}$ — $2\frac{2}{3}$ lines.